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ABSTRACT

This booklet is a compilation of several field-tested school maintenance and operations programs. The material in the booklet is based on brief written summaries of 20 presentations made at a special "Maintenance and Operations" session held at the Association of School Business Officials' 1980 annual meeting. The booklet is divided into three sections. Articles in section 1 describe various methods and procedures for developing, maintaining, and upgrading maintenance and operations programs. Articles in section 2 deal with roofing and reroofing. Section 3 covers lighting, asbestos control, seeding vs. sodding, and negotiations with employees. Listed before each article is the name, address, and telephone number of the individual who made the original presentation on that topic. The intent of this resource listing is to provide other school administrators with the information necessary to contact these individuals directly and learn more about their respective programs and ideas. (Author/LL)

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Field-Proven Programs to Improve Maintenance and Operations

Tried and proven programs that are helping school districts provide clean, safe, attractive and efficiently functioning facilities and buildings

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THE ASSOCIATION OF SCHOOL BUSINESS OFFICIALS OF THE UNITED STATES AND CANADA is an international professional educational organization, incorporated not for profit, and is the oldest and largest education organization in North America devoted exclusively to the improvement of school business management. Its main objectives are to encourage the wise expenditure of taxpayers' monies, and to improve efficiency in the practice of school business management.

Field-Proven Programs to Improve Maintenance and Operations

Tried and proven maintenance and operations programs that are helping school districts in the United States and Canada provide safe and attractive educational facilities

As presented during a Special Session on Maintenance and Operations at the 66th Annual Meeting and Exhibits of the Association of School, Business Officials of the United States and Canada, October 27, 1980, New Orleans, Louisiana.

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Preface

The basic, underlying professional objective of the Research Corporation of the Association of School Business Officials (RC-ASBO) is to identify and share timely, appropriate information about successful school business management programs and practices. This publication is just one example of how RC-ASBO programs meet that objective. It presents a series of field-proven school maintenance and operations programs, practices, procedures and ideas that can assist educators grapple with the resource allocation challenges of the 1980s.

In addition to sharing valuable maintenance and operations ideas and proven techniques, the programs presented in this book provide a resource listing of the names, addresses and phone numbers of the individuals and organizations who are willing to share greater details about their respective programs and ideas with other educators.

Donald G. Buchan
Executive Director, RC-ASBO

Introduction and Acknowledgements

During its 66th Annual Meeting and Exhibits in New Orleans, Louisiana, October 26-30, 1980, the Association of School Business Officials of the United States and Canada presented a Special Session on "Maintenance and Operations." This 90-minute educational program presented a series of mini-workshops, each featuring a successful, field-proven practice, method or technique to improve school maintenance and operations programs.

The presenters at these mini-workshops were school administrators and others extremely knowledgeable about maintenance and operations programs. Each presenter's school district or organization had developed and/or implemented a successful program to improve school district maintenance and operations programs.

During this Special Session, each presenter described his organization's exemplary maintenance and operations program which provided the basis for a brief written summary – a "Tip Sheet" – that was included in a "Gold Mine" packet distributed to everyone in attendance.

The material presented in this book is based on those tip sheets and the supporting materials submitted to the Association when each school district applied for participation in the program.

ASBO acknowledges the contributions made by these presenters and by those within the presenters' respective school districts to the success of the Special Session on Maintenance and Operations whose diligent work and dedication were responsible for developing and implementing the programs described on the following pages. All participants have agreed to have the material presented during the Special Session included in this ASBO publication so that their experiences can be shared with other school administrators across the United States and Canada.

Those who participated in the Special Session on Maintenance and Operations at ASBO'S 66th Annual Meeting and Exhibits were:

Frank Barzilla, Director of Facilities and Planning, Clear Creek Independent School District, League City, Texas.

James C. Berger, Supervisor of Buildings & Grounds, Saint Vrain Valley School District RE-1J, Longmont, Colorado.

Paul C. Bisel, Director, Facilities & Planning, Weld County School District #6, Greeley, Colorado.

Gerald L. Coffman, Supervisor of Buildings and Grounds, Scotch Plains-Fanwood Public Schools, Scotch Plains, New Jersey.

Donald E. Custer, Manager, Building Maintenance & Operations, Baltimore County Public Schools, Towson, Maryland.

Dr. Robert Den Hartog, Associate Superintendent for Business Affairs, Lincoln Public Schools, Lincoln, Nebraska.

Jimmie L. Duncan, Assistant Superintendent-Business Services, West Covina Unified School District, West Covina, California.

Robert D. Gara, Business Administrator, North Colonie Central School District, Newtonville, New York.

Edmund A. Kwaterski, RSBA, Director of Business Services, Fond du Lac School District, Fond du Lac, Wisconsin.

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Dr. Irene M. Lober, Superintendent of Schools, University City School District, University City, Missouri.

James Migliorino, Director of Maintenance & Operations, Glendale Elementary School District #40, Glendale, Arizona.

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Jerome T. Schmitz, Manager of Maintenance, Boulder Valley School District, Boulder, Colorado.

John Schwenger, Executive Director of Facilities, Aurora Public Schools, Aurora, Colorado.

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Doug Winters, Sr., Physical Plant Director, Tarrant County Junior Colleges, Hurst, Texas.

Charles G. Stolberg
Editor

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Section 1

Methods and Procedures

Ten Money-Saving Suggestions for Your M & O Program

As Presented by:
Frank Barzilla
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Clear Creek Independent School District
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League City, TX 77573
Phone: 713/332-4561

Does your maintenance appetite exceed your pocketbook? Do you need to know how to save dollars from an already limited budget? Some of the ways to save money and still maintain efficiency are common sense, while others need to be tried.

The items listed below speak to ways our district has managed to save maintenance and operations dollars. Most likely, you have either heard of or used many of these suggestions before. However, some are the type you need to see results on before you can afford to try. All have been tried and have shown monetary results.

1) Hire competent, professional tradesmen in various maintenance fields.
2) Do not contract out anything you can economically do yourself.
3) Educate your principals as to who performs what on your staff.
4) Use your journeymen to constantly train apprentice help for future use.
5) Use the maintenance department to train your head custodians to perform minor repairs.
6) Utilize vendors of custodial supplies to conduct free training seminars for custodial staff.
7) Utilize building principals heavily in the supervision/evaluation role for his staff. This saves considerable administrative time within the department and saves considerably on complaints.
8) Train head custodian in proper staff management and utilization.
9) Be involved in school design and renovation design so standardization of many items can occur.
10) Convince administration that putting less expensive materials in buildings is a case of "you can pay me now or pay me later."

A NEW BEGINNING— A Cost Effective and Efficient Maintenance Program for Your Schools

As presented by:
Jerome T. Schmitz
Manager of Maintenance
Boulder Valley School District
P.O. Box 9011
Boulder, CO 80301
Phone: 303/447-1010 – Ext. 492

ARE YOUR MAINTENANCE EMPLOYEES ACTIVELY INVOLVED IN MAINTAINING AND REPAIRING OF BUILDINGS AND GROUNDS? If not, they should be! However, many times we *see* school maintenance personnel functioning as a mini or light construction crew, and custodians being utilized as maintenance mechanic only when needed to replace components whenever something breaks down.

Here are some suggestions in developing a well rounded maintenance program emphasizing program and preventive maintenance as a *No. 1* priority.

1) Establish a schedule for the school year showing where your maintenance crew(s) will be at any given time. This schedule should be sent to all principals and directors two weeks prior to the starting of schools, or approximately mid-August.
2) Develop a preventive and programmed maintenance check list on all equipment, structures and sites to be done by the maintenance crew(s).
3) Define, explain and sell your program to all interested people in your district, such as maintenance and custodial personnel, principals, teachers, students, PTA, Booster Clubs and parents.
4) Set up a procedure to receive requests by mid-April for remodeling; building shelving; cabinets; and major renovations in electrical, plumbing and heating during the summer months (approximately 12 weeks). Schedule only the amount that can be accomplished during this period of time, utilizing a priority basis established by a committee made up of the people you are servicing.

Criteria in developing your schedule should include these factors:

- Number of maintenance employees.
- Total square footage of buildings.
- Total acres of sites.
- Age of buildings.
- Length of school year.
- Level of school (high school, junior high or elementary).
- Schedule each school to be serviced at least three times in each school year no matter how small or large.

The benefits and rewards of utilizing this type of maintenance program in *your* school district will include:

- The maintenance staff will be in a position to act instead of *re-act.*
- It's a program striving toward equalization of maintenance in all schools.
- Principals and faculties know when to expect your crew and how much time they will have your services during the school year.
- Decentralization of maintenance employees will result in a savings of approximately one hour per day per employee by having them start and leave directly from the school that is being serviced that day.

Planning Your Maintenance and Operations Program

As presented by:

Gerald L. Coffman
Supervisor of Buildings and Grounds
Scotch Plains-Fanwood Public Schools
2630 Plainfield Avenue
Scotch Plains, NJ 07076
Phone: 201/232-6161

Any preface relating to the importance of developing and operating a sound maintenance program is not needed here. Those of us who are assigned this charge must be well aware that we are responsible and accountable for operating a facility that is safe, clean, comfortable and results in few, if any, interruptions to the educational programs.

How is the Program Put Together? Who and What are Needed?

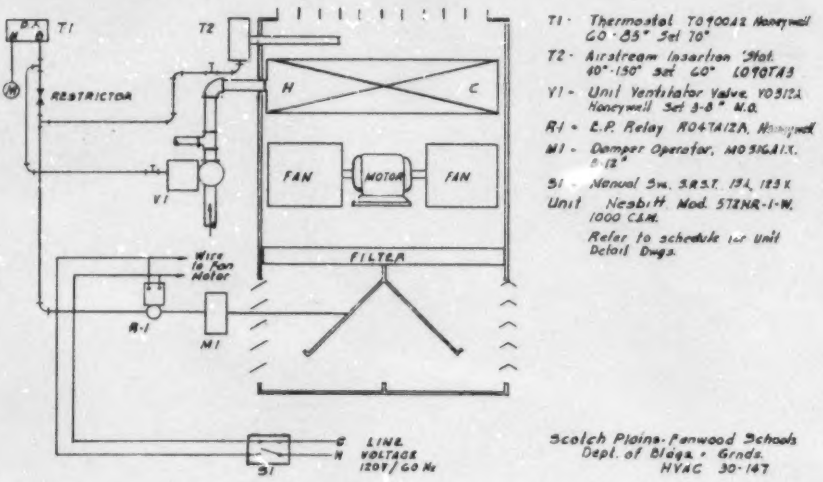
You: The Supervisor of Buildings and Grounds, the Director of Maintenance and Operations, the Foreman, or any other title given to a person who must know his buildings; the materials used; the mechanical systems and how they operate; how much grass will have to be cut; how much paving will have to be cleaned; how much snow will have to be removed; how much oil will be burned; . . . and on and on.

Personnel: Not all of us will have on staff sufficient personnel adequately skilled in the construction and mechanical trades to properly maintain and operate a school district's complete facilities. If skilled mechanics are available, maybe in-service training could be reduced in some areas, but considering the diversity of work to be done, manpower turnover, updating systems, and the like, training programs in all areas should be routinely scheduled.

From time to time the services of architects, engineers and consultants may be required for major repairs, renovations and other projects. Know where these services may be obtained and their cost. It will be helpful in case of emergencies.

Materials, supplies and equipment: Many parts in the heating and ventilating systems, controls, motors, clock and program and so on are not shelf items and require time to obtain. All systems must be reviewed. Hard to get parts, and parts used frequently, should be purchased and placed in inventory. An inventory will serve several purposes: down time will be reduced and a replacement part will be on hand for those that become obsolete through the years. Many component parts are specially made for equipment manufacturers and are changed and discontinued when equipment is revised.

If shop drawings which describe equipment operation, function of component parts and applicable wiring diagrams, are not available, prepare a diagram similar to the sketch below.



In planning a preventive maintenance program I find it most convenient to first prepare a schedule for every room and space in a building. In this schedule, list everyting in the room that will require replacement parts and/or preventive maintenance service: lighting (lamps and ballasts); clock and program equipment; plumbing (type, manufacturer and so on) fixtures; heating and ventilating equipment and controls.

Where there are systems in a room, prepare the schedule and refer to applicable sketch number. If shop drawings are available, and they are up to date and accurate, refer to the shop drawings in lieu of a sketch. Any changes in the system made by substituting controls, equipment or a change in the operation must be noted so that the drawings are always up to date. There are many advantages in having this information available:

For in-service training programs: By actually working with your maintenance people on a unit system such as detailed here, locating parts, describing the function of each and explaining the sequence of operation will be extremely valuble. This design is typical for 47 rooms in one of our buildings. The training time was

well spent. These "fly sheets" are important to your preventive maintenance service crew.

For ordering parts: The parts of a system are all listed. Once the malfunctioning part is determined, a replacement part can be ordered. You can also determine what spare parts should be in your inventory.

For scheduling preventive maintenance: Most systems will operate well and with few failures if they receive proper service and are not tampered with. A classroom heating and ventilating system is usually typical for each classroom in a building. Walk your mechanics through a preventive service procedure in a room and, after a couple of rooms, you have trained your maintenance personnel to do about *half* of the heating and ventilating preventive maintenance in a building. The principle for heating and ventilating systems in other areas will probably be similar but equipment will be larger or smaller. I believe an equipment schedule and the sketches or shop drawings are the basic requirements for developing a sound program.

It could be that when your program is put into effect, things will run so smoothly you will be able to enjoy a round of golf more frequently. Remember, however, you must still schedule plumbing, general construction, roofing, flashings, glazing, ceilings, floor covering, masonry, hardware, tile work, maintenance of grounds, snow removal and it goes on and on . . . *Good Luck!*

An Uncommon Preventive Maintenance Plan for Junior and Community Colleges

As presented by:

Doug Winters, Sr.
Physical Plant Director
Tarrant County Junior Colleges
828 Harwood Drive
Hurst, TX 76053
Phone: 817/281-1142

The general purpose of preventive maintenance is to find and repair equipment before it fails to function. Some of the specific returns of a well-organized program are reductions in:

- The number of large scale repairs.
- The amount of overtime emergency work.
- The frequency of expensive, emergency purchases.
- Down-time of equipment and facilities.

In general, preventive maintenance consists of inspection, cleaning, lubrication, tightening, adjustments and replacing worn or damaged parts where necessary. Some of this equipment where preventive maintenance is performed are:

- Built-up roofs, flashings, roof fans, roof drains, gutters and the like.

- Air compressors, oil, filters, bleed offs, motors, belts and rust removal.
- Exterior brick weather proofing, pointing of cracks and replacement of loose mortar.
- Door closers, hinges, locks, weather stripping and kick plates.
- Plumbing, faucets, sink drains, steam and hot water traps, sprinkler systems, water treatment, flush valves and man hole and sewer cleaning.
- Cleaning lighting fixtures; changing noisey ballasts, bad lamps and starters; and voltage checks.
- Painting roof vents, fans, flashings, exterior doors, exterior play equipment, signs and so forth.
- Maintenance of roads and walks; repairs on asphalt drives, parking lots and walkways; sealers; asphalt slurry; chug-hole coid patching.
- DX and cooling tower maintenance. drain towers, seal and paint, compressor and pump inspections, seals, bearings, couplers, wiring, starters, contractors, heaters and the like.
- Mechanical rooms: keep free of furniture, storage items, dust, repair leaks, spray or insulate chill water valves to prevent rust, store belt size in these rooms for blowers.
- Motors, bearing packing, automatic grease retainers for unaccessible equipment.
- Fan coil, cleaning, filters and leak checks.

One technique that can be used in a preventive maintenance program is a tab card file. In such a system, a 5" x 8" card for each kind of equipment is used. On the card, identify the equipment, its location and list items on the equipment needing attention daily, monthly or yearly.

Another type of system uses color coded cards. A different color card is used for weekly, monthly, semiannual and annual work, on each piece of equipment.

A third technique is to use a computer to schedule preventive maintenance.

Grounds and landscape: preventive measures.

- Cultivation to soil.
- Pruning and trimming.
- Watering.
- Spraying.
- Fertilizing.
- Mulching.
- Leaf and limb disposal.
- Winter protection.
- Tree trunk protection from mowers.
- Weed removal.
- Fertigation: watering and liquid fertilizer through pumps and injection.
- Test soil for its requirements.
- Add top soil to lawns.

Preventive maintenance employees:

- Develop and create an interest in his job assignment.
- Expand their field of influence through job enrichment.

- Give them rewarding assignments.
- Communicate at all times.
- Semi-skilled in several crafts.
- Truck, tool and equipment assigned to each to perform his job adequately.

Summary: A good preventive maintenance plan for junior colleges should include these nine steps:

1) Select the best mechanics for your preventive maintenance programs.
2) Provide the necessary equipment, tools and instruments to accomplish this plan.
3) Keep an accurate record of preventive maintenance work performed on each building.
4) Spot check by supervisor on preventive maintenance cards handed out.
5) Assign only the number of square feet on buildings that the preventive maintenance crew can properly cover.
6) Replace equipment on controls which continue to break down due to factory fabricated faults.
7) Replace equipment items where parts are obsolete.
8) Good housekeeping will provide a good maintenance program.
9) Emphasize to each employee the importance of his job in preventive maintenance; that this is a savings to the department before deterioration or complete break down of equipment occurs.

Upgrade Your System With a Periodic School Assessment Program

As presented by:
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School business officials need to periodically assess school sites to determine what maintenance efforts need to be undertaken to upgrade facilities. West Covina Unified School District (California) has developed, and is using, an annual facility assessment program. Each site administrator is responsible for assessing his facility using a standard survey instrument. The instrument contains descriptive choices (numerically rated) about internal and external factors. The instrument examines 20 internal factors and 9 external factors. The ratings, "2" or "3" indicate above standard, and "1" or "0" indicate below standard, are then normalized and recorded. By recording the ratings on matrix charts, the district can analyze each

maintenance factor for an entire site or we analyze a single maintenance factor throughout the District.

Benefits from the analysis of these numerical ratings are these:

1) Comparison of current data with prior years permits assessment of how well the District is maintaining its standards;
2) Each maintenance person or team can plan its work based on identified needs;
3) The question of "why more is done at one site" is qualitatively answered;
4) Each maintenance person or team becomes "the owner of the identified problem;"
5) The charts which are developed provide ready reference for reporting the condition of school sites;
6) A system of allocating maintenance resources based on need; and
7) An improved appearance of school sites, providing a cleaner and safer environment for our public.

Here is a brief description of our facility assessment program:

Annually, each site administrator, with a site committee that he chooses, assesses his facilities using a survey instrument that provides descriptive choices about internal and external factors. His rating will result from choosing the description which most nearly matches his assessment [eg., exterior walls: 3) clean, good color; 2) need cleaning; 1) faded, chipped, graffiti scars; 0) repair and repainting needed].

Each site administrator and his committee rate a site on 20 internal factors and 9 external factors. In order to avoid the subjective problem of a committee which rates all factors high or low, one district employee separately rates all sites on three internal and three external factors, and these ratings are used to normalize the data during district-wide analyses.

After the site survey rating forms are collected for analysis, the raw score ratings from each site committee are "normalized" statistically and the rating recorded. The standard is set at a score of "2" with "3" being above standard, and "1" and "0" below standard. By recording the ratings on matrix charts, one can analyze each maintenance factor for an entire site [horizontal analysis] or one can analyze each site within a single factor [vertical analysis].

Maintenance factor analysis identified where greater resources and/or a different approach is needed [for example, plumbing all below standard, turf in bad shape at all locations, and so on]. Site analysis identifies those sites where concerted maintenance efforts are required and/or negligence by the site administrator needs to be corrected.

The matrix data are used in several ways. By comparing current data against the prior year(s) the organization can determine how well its resource allocation for the current period has maintained the standards established. On a functional level, each maintenance person or team can plan its work to maintain at or above standard conditions or bring substandard conditions up to standard.

Any factor which is identified as being below district standards is then analyzed to identify reasons for deficiency and formulation of action plan. Site administrators are consulted in order to gather their perceptions. The maintenance

employee responsible for the action plan is then asked to identify the action needed to bring the area to district standards or above, project the cost of the activity, and to establish the date for completion.

One outcome of this facility assessment system is that the Maintenance Department now generates Maintenance Work Orders and sends them to the schools on a proactive basis, rather than waiting for schools to initiate them. Also, the work orders are generated by the employee responsible for the work being done, thereby permitting the organization to maximize the expertise of many employees. Another outcome is that the publicized results of the annual assessment clarify how the maintenance budget will be used, thus explaining why greater effort may take place at one school site than another.

The facility assessment system has been a positive management technique for the West Covina Unified School District.

A Work Order and Scheduling System

As presented by:
Robert D. Gara
Business Administrator
North Colonie Central School District
Route #9
Newtonville, NY 12128
Phone: 518/785-8591

Be a hero – Promise and get those maintenance repairs and maintenance projects done on time with this work order and scheduling system.

Many Directors of Buildings and Grounds believe they are understaffed and that their workload is overwhelming. They cite this as the reason why they turn down requests or refuse to specify a date when a needed job will be completed. They and their men feel under constant and overwhelming pressure. Not only are they unhappy but so are the requestors of various jobs who are left in the dark as to when *or even if* their request will be handled.

All of this is unnecessary and can be turned around in one day's time or less so that requestors know they will get their job done and when the Director of Buildings and Grounds stops worrying. *All* backlogged jobs are now out of his mind and on paper, scheduled according to a timetable that he knows can be accomplished. And for the first time, each man on the maintenance staff knows well in advance the jobs he will be working on.

North Colonie Central School District is located just north of Albany, New York, and houses 5,000 students in eight schools, encompassing 750,000 square feet. A total of seven skilled tradesmen and helpers employed by the District handle 99% of all boiler, plumbing, roofing, electricity, carpentry and electronic maintenance, repair and small project construction. Because of the availability of a competent in-house staff, numerous requests for this type of work are received.

At one time, our Director of Buildings and Grounds believed he was very much understaffed and didn't know "how he was going to get the work done." Now he knows the work will get done and so do I, the Business Administrator. No longer do I get calls from principals complaining about their inability to get needed work done.

Implementation of this system provided our Director of Buildings and Grounds with the following management information necessary to run a well functioning department:

- How much of a backlog there is for each men or trade in terms of hours, and the first date that the next job accepted can be accomplished.
- Where can workers with multi skills be best utilized to balance backlog of jobs.
- Documented evidence of which workers require more than average time to complete a job and vice versa. (When workers know time records are kept on a job the tendency to dawdle is reduced).

The plan's primary feature is that a requestor is kept informed on the status of his request through the following means:

- He keeps a copy of the original request so that he knows what he requested and when.
- Within three days after sending out his request, he receives a copy of his original request with scheduled completion data shown.
- When the job is completed, he receives another copy showing the job was done.

The effect of this is that the requestor knows what he requested, when he requested it and when he said he wanted it. This alone solves many problems inherent with undocumented requests. Soon he knows *if* the job will be done and *when* it is scheduled to be done.

The success of the system is based on two main axioms that work:

1) Even Principals are satisfied to wait long periods of time to get a job done provided they are told the job will be done and the job is always done when promised.
2) In scheduling work, always *plan absolute completion dates one week ahead of when the requestor is told the job will be done.* This makes 99% of all jobs done before they have been promised and will please your Principals, your workers (who will not always be confronting angry Principals) and will make you a "hero".

Time required to start the plan: Initially, one day of uninterrupted time such as a Saturday, is needed by the Director to schedule all backlogged work requests. Several hours of clerical time will be needed to post all requests to work orders and logs and to send copies of forms with schedule dates to requestors.

Time required to maintain the plan:

- Director – less than one-half hour per day.
- Clerk – less than one-half hour per day.

Forms Required to operate the plan:

- Work requests form (see Figure I)

FIGURE I

NORTH COLONIE CENTRAL SCHOOL DISTRICT
NEWTONVILLE, NEW YORK 12128

This section to be completed by requestor.

JOB # _____ (Leave Blank)

REQUEST FOR REPAIRS OR SERVICES AND SUPPLIES

Date of Request _____

DIRECTOR OF SCHOOL FACILITIES AND OPERATIONS

REQUESTED BY: _____

Repairs ☐ Building _____

Service ☐ Has to be done by: _____ Must be specific Date

Supplies ☐ Like to be done by: _____

NEEDS _____

FOR BUILDINGS & GROUNDS USE ONLY

We expect to fulfill request by:

Remarks: _____

Date _____ Signed _____

Any inquiries concerning these dates may be made by calling the Director of School Facilities and Operations between 8:00 a.m. and 9:00 a.m. on week days.

This request was fulfilled on _____ (Date)

Remarks: _____

Date _____ Signed _____

SCHEDULING INFORMATION:

Job Title _____

Priority _____

Estimated Duration _____

Expected Completion Date: Start _____ Finish _____

Worker(s) Assigned _____

Actual Hours _____

Date Completed _____

Copies to: School File (1) White
Buildings & Grounds (3) All Others

FIGURE II
PROCEDURE

PROGRAM:	BUILDINGS AND GROUNDS
CATEGORY:	JOB SCHEDULING
OBJECTIVE:	ASSURE THAT JOBS ARE SCHEDULED ON TIME AND THAT PROPER NOTIFICATION IS GIVEN TO ALL PERSONS INVOLVED
WHEN:	DAILY

RESPONSIBILITY	TASK	
REQUESTER	01	Complete "Request for Repairs or Services and Supplies" form in triplicate. Fill in completely.
		a. Send two copies to Supervisor of Buildings and Grounds.
		b. Retain one copy for school's file.
SUPERVISOR BUILDINGS & GROUNDS	02	Review duty request forms. If request is to be handled, determine priority of job, estimated duration, suggested completion date and workers to be assigned. Indicate on form. If request cannot be handled, the request form is returned to requester with an explanation.
CLERK	03	Assign next consecutive job number from index to request and post number, title and location to index and number to request form.
CLERK	04	Scan worker's monthly work schedule and assign duties in openings in relation to date to be completed and priority of jobs.
CLERK	05	Post estimated duration, suggested completion date and worker(s) assigned to the job index.
CLERK	06	File first copy of job request sheet in numerical order. Return second copy to requester.
SUPERVISOR BUILDINGS & GROUNDS	07	Post data of completion of jobs to index as soon as completed.
CLERK	08	Post "date completed" to request form and return to requester.
CLERK	09	Review job index daily for assignments that are in danger of not being completed on time and refer to Supervisor of Buildings and Grounds for appropriate action. Reschedule if necessary, notify requester.
CLERK	10	Review request file weekly to be sure forms have been properly handled.

- Index: shows all requests received in chronological order, date received, consectuive number assigned, estimated completion date, trades (or workers) assigned, and space for date completed.
- Individual Schedule Sheet for each worker: shows job assigned, estimated number of hours needed, week in which job is to be done.

Procedure: See Figure II

Results: Jobs are commpleted before due dates and anxiety attacks of requestors, maintenance staff and you are eliminated. You are now a "hero".

Annual Employee Evaluations— A Key to Increased Productivity

As presented by:
Tom Morris
Business Manager
Parma City School District
6726 Ridge Road
Parma, OH 44129
Phone: 216/842-5300

The evaluation process (see forms, following pages) should be used as a positive, helpful tool to improve employee performance rather than the basis for disciplinary action or dismissal. The attitude of the supervisor and the way the appraisal is done will determine which of these alternatives is accomplished.

The supervisor should first judge and indicate on the evaluation those areas where an employee's performance is good, very good, outstanding, exceeds expectations and so on.

In these areas the supervisor shall make written comment.

In those areas judged unsatisfactory, needing improvement or not meeting minimum requirements, the supervisor shall so indicate, but also shall make positive ***measurable*** suggestions that will improve performance if employee makes a reasonable effort to follow the suggestions.

A personal interview shall be conducted with the employee to discuss the evaluation.

The employee should have ample time to discuss the evaluation and may make written comments on the form and may or may not wish to sign the form.

Schedule a meeting three months after the evaluation to review progress and effectiveness of the improvement suggestions.

Areas that are judged unsatisfactory to do not meet minimum requirements should be reviewed within 30 days (20 work days) and at subsequent 30-day intervals up to 90 days.

FIGURE III
EMPLOYEE PERFORMANCE REPORT FORM

☐ REGULAR
☐ PROBATIONARY

PARMA PUBLIC SCHOOLS
Parma, Ohio 44129

EMPLOYEE'S PERFORMANCE REPORT

Employee _____ For Period Ending _____

Position _____ Date Due _____

Location _____

PERFORMANCE FACTORS	CHECK IN THE PROPER COLUMN				
	UNSATISFACTORY	SATISFACTORY: Improvement Needed	SATISFACTORY: GOOD	SATISFACTORY: VERY GOOD	OUTSTANDING
1. QUALITY OF WORK – Accuracy, completeness, thoroughness, neatness of work.					
2. QUANTITY OF WORK – Amount of work done.					
3. KNOWLEDGE – Knowledge of methods, materials, objectives and other fundamental information, skill.					
4. LEARNING ABILITY – Speed and thoroughness in learning procedures, rules and other details. Alertness, perspicacity.					
5. WORK HABITS – Organization of work, care of equipment, safety, industry.					
6. RELATIONSHIP WITH PEOPLE – Ability to get along with the public and other employees.					
7. DEPENDABILITY – Degree to which he can be relied upon to do the job without close supervision.					
8. ATTENDANCE – Frequency and nature of absences and tardiness.					
9. ATTITUDE – Interest in the work, willingness to meet job requirements and accept suggestions, loyalty to the organization, ethical conduct.					
10. PERSONAL FITNESS – Physical capacity, appearance, personal habits.					
11. JUDGMENT – Soundness of decisions, common sense.					
FOR USE IN RATING SUPERVISORS ONLY:					
12. SUPERVISORY SKILL – Planning and assigning work, making decisions, training instructing and evaluating employees, leadership, fairness, interest in employee welfare.					
13. OVERALL RATING – Should reflect the above ratings.					

COMMENTS: Comments help support and interpret ratings. "UNSATISFACTORY," "IMPROVEMENT NEEDED" and "OUTSTANDING" ratings must be explained in this space.

Employee's Signature _____ Date _____

Appraiser _____ Title _____ Date _____

REVIEWER: The reviewer must also assign a rating of the employee's overall work performance by placing a check in one of the following spaces:

☐ UNSATISFACTORY ☐ IMPROVEMENT NEEDED ☐ GOOD ☐ VERY GOOD ☐ EXCELLENT

Reviewer Comments: _____

Reviewer: _____ Title _____ Date _____

ALL FORMS TO BE RETURNED TO PERSONNEL OFFICE
PERSONNEL OFFICE

PP77-8

FIGURE IV
APPRAISAL FORM

NAME _____ DATE _____

POSITION _____

PARMA PUBLIC SCHOOLS
Administrative/Supervisory Staff
APPRAISAL FORM

Page 1

PERFORMANCE FACTOR APPRAISALS

Consider each factor separately by reading the factor definition carefully, and by interpreting the performance degree definitions only in the context of that factor. Appraisal on each factor should be made independently of other factors. Indicate your appraisal on each factor by placing a check in the appropriate box.

EXCEEDS EXPECTATIONS: Results show achievements which contribute to organizational goals beyond the primary work objectives, and which exceed what is reasonably expected of a well-trained individual in this classification.

MEETS EXPECTATIONS: Results show attainment of primary work objectives in the manner reasonably expected of a well-trained individual.

NEEDS SOME IMPROVEMENT: Results generally below satisfactory achievement. Attainment of primary work objectives not reached.

DOES NOT MEET MINIMUM REQUIREMENTS: Results show deficiencies which seriously interfere with attainment of primary objectives of the work.

PERFORMANCE DEGREES	1	2	3	4	5	6	7	8
1. LEADERSHIP CHARACTERISTICS: Willingness to make decisions and accept responsibility; forcefulness; ability to effect desirable change; enthusiasm and initiative shown in performance; ability to motivate others.								
2. DECISION MAKING: Success in solving problems; willingness to accept assistance; judgment; logical thinking; application of creativity and imagination.								
3. SUPERVISION: Skill in evaluating performance of others; knowledge and skill in employment of effective supervisory techniques and methods; skill in human relations.								
4. PERSONAL MANAGEMENT: Ability and willingness to plan; ability to get things done; proficiency in performance of necessary routine tasks; punctuality and attendance.								
5. PROFESSIONAL RESPONSIBILITIES: Observance and support of policies and administrative procedures; positive participation in assignments; positive participation in problem-solving activities; participation in development and in support of established goals and objectives; efforts directed toward self-improvement.								
6. PROFESSIONAL KNOWLEDGE AND PERFORMANCE: Specific knowledge in duties and responsibilities; knowledge of current trends and practices in technical area; efforts directed toward continuous development of a strong program.								
7. PERSONAL QUALITIES: Appropriate appearance; communications skills; health and vitality; emotional stability; positive outlook; cooperation, confidence, integrity; objective, tough-minded; sympathetic; cordial.								

FIGURE IV (Continued)
APPRAISAL FORM

NAME _____

POSITION _____

PARMA PUBLIC SCHOOLS
Administrative/Supervisory Staff
APPRAISAL FORM

Page 2

STRENGTHS: _____

WEAKNESSES: _____

SUGGESTIONS FOR IMPROVEMENT: _____

GENERAL APPRAISAL: ☐ Satisfactory

☐ Unsatisfactory - Recommend Conference With Reviewer

APPRAISER'S SIGNATURE _____ TITLE _____ DATE _____

This report has been discussed with the individual being appraised. APPRAISEE'S SIGNATURE _____ DATE _____

REVIEWER: The reviewer will sign that he has read this appraisal prior to distribution of copies and placement of the report in the employee's file.

COMMENTS: _____

REVIEWER'S SIGNATURE _____ TITLE _____ DATE _____

Energy Tours—A Custodial Training Program

As presented by:
Dr. Robert Den Hartog
Associate Superintendent for Business Affairs
Dr. John M. Romisher
Administrative Assistant – Business Affairs
Lincoln Public Schools
P. O. Box 82889
Lincoln, NE 68516
Phone: 402/473-0224

Are you presently training your custodial staff to reduce energy consumption? What specific training ideas are appropriate to emphasize? The energy tour concept was first used in the Lincoln, Nebraska, Public Schools during the 1977-78 school year as a technique to train custodial supervisory staff members.

Energy Tours – Energy tours[1] are, simply stated, a building walk-through experience where custodial staff members visited other district buildings during classes to observe and analyze energy consumption practices used by building personnel.

Emphasis is placed upon the custodian's role of working with building staff members in reducing energy consumption. This role is further clarified as monitoring the use of energy at their assigned building[2] with emphasis upon: electrical lighting uses; other electrical measures; heating equipment uses; cooling equipment uses; ventilation equipment uses; and water equipment uses.

In summary, custodians are trained to identify energy consumption practices that waste energy so specific recommendations can be made to building administrators for changes in either the building or the use of space by occupants. Also, building administrators, teachers or other staff members are encouraged to participate in the tour.

Energy Tour Checksheet – A copy of the Energy Tour Checksheet is presented as Figure V. Custodial staff members are encouraged to complete the checksheet as they walk through a building in the training program.

Criteria include observing for each room or area, these items: occupancy; lighting; blinds; doors; windows; radiators; and thermostats. Comments are to be made on the checksheet as each space is visited.

At the end of an energy tour, information is collected and analyzed with findings reported in a memorandum to the building principal. Both energy savings

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Sources

[1] John M. Romisher and Robert Den Hartog, "Energy Tours Can Train your Custodians to Reduce Energy Consumption." *The Nebraska Custodian*, January - February, 1979, pp. 12, 14, and 16.

[2] John M. Romisher and Robert Den Hartog, "The Role of the Custodian on the Energy Management Team," *The Nebrasks Custodian*, July - August, 1978, pp. 24, 36-27.

FIGURE V
ENERGY TOUR CHECKLIST

LINCOLN PUBLIC SCHOOLS
DIVISION OF BUSINESS AFFAIRS

ENERGY TOUR CHECKSHEET

I. **Building Information**

No.	Building Name	Date	Evaluator

Square Feet	Pupils	Year Constructed	Type of Heating System

II. **Directions**

Complete the Energy Tour Checksheet as you are guided through the building. Remember that you are to observe and record instances of energy waste related to building usage. Reasonable comfort should not be sacrificed for conservation.

	CRITERIA																				
	Occupancy				Lighting				Blinds			Doors		Windows		Radiators		Thermostat		Comments
Room or Area	FULL	UNOCCUPIED	LESS THAN ½ OCCUPANTS		FULL	REDUCED	MINIMAL	NONE	OPEN	ADJUSTED	CLOSED	OPENED	CLOSED	OPENED	CLOSED	UNOBSTRUCTED	BLOCKED	TEMPERATURE	CONDITION	

techniques already in use, as well as poor energy savings practices are reported for use by the administration.

Summary – As an outcome of this training tour, each participant is encouraged to return to their assigned building and in cooperation with their principals, conduct an Energy Tour of their own building.

ASBO's Custodial Methods and Procedures Manual

As presented by:
Dr. Irene M. Lober
Superintendent of Schools
University City School District
725 Kingsland Avenue
University City, MO 63130
Phone: 314/727-1070

At this time of declining enrollments and financial constraints, school districts are finding that they are not able to replace or renovate buildings at the rate they were accustomed to doing. Instead, emphasis must be placed on maintaining existing physical plants at maximum efficiency with minimum expenditure of funds. Efficiency must be obtained by looking at productivity, needs versus wants, staffing, methods and procedures, conservation of energy, proper use of storage of materials and equipment, job scheduling, maintenance of standards and organisational structure in terms of delivery of services.

In such a highly labor intensive operation, it is important that our standards and expectations be just as intensive. The public expects no less.

ASBO's *Custodial Methods and Procedures Manual*[1] addresses these issues realistically and in conformity with the state of the art as it exists today, utilizing standards accepted in industry established by various time and motion studies and evaluation procedures available.

Recognizing the uniqueness of individual school districts, the manual is designed in a manner that readily enables its application and adaptation to various sizes and conditions existing in individual school districts.

The manual contains specific information and details of the broad scope of custodial operations to include, but not limited to, organization, staffing standards, job descriptions by title, detailed job schedules, cleaning procedures by function, cleaning methods, storage and care of equipment, safety precautions, fire prevention, personnel forms and policy statements.

Contract services, a rapidly expanding administrative solution, is dealt with as a viable alternative to inhouse management as a means of dealing with rapidly escalating costs, deteriorating quality and decreasing productivity.

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1. *Custodial Methods and Procedures Manual*, published by the Research Corporation of the Association of School Business Officials of the United States and Canada, is a comprehensive

nuts-and-bolts guide to help provide clean, safe, attractive and efficiently functioning facilities and buildings in a school district. Developed as a .esearch project of ASBO's Maintenance and Operations Research Committee, this 95-page publication is priced at $12.95 per copy (plus shipping and handling). For information, contact: Publications Department, Association of School Business Officials, 720 Garden Street, Park Ridge, IL 60068. Phone 312/823-9320.

Section 2

Roofing and Re-Roofing

What's New in Roofs?

As presented by:
Paul C. Bisel
Director, Facilities & Planning
Weld County School District #6
811 - 15th Street
Greeley, CO 80631
Phone: 303/352-3069

While the conventional hot applied built-up membrane roof is still the most commonly used, more new products and processes are being introduced into the roofing field. Much of this is being brought on by the increased cost of petroleum used in roofing, by the need to increase insulation and by the difficulty of finding competent craftsmen. In any roofing job, the quality of application is as important as the process and material used. In many of the new systems, part of the quality is controlled in a factory environment, but the hot built-up roof is primarily put together in the field.

Seven basic types of non-conventional systems are now available. Three are still basically built-up or partially built-up systems with a hot bitumen substitute.

Membrane cold process roofing (solvent based)–Cold process roofing gets its name from the use of adhesives which do not require heat to melt. The asphalt is dissolved in solvent, which when it evaporates reverts to its original state. The membranes can be either coated organic felts or glass mat. The adhesive, generally fibrated with asbestos, is normally put down below and between each layer of felts and is used as a surfacing material with #11 roofing granules added. The flashing is similar to that used with hot roofing but uses plastic cement as an adhesive.

Bituminous emulsions–In a new roof, the asphalt emulsions are applied over a hot applied minimum two-ply roof or on re-roofing directly over a cleaned and repaired smooth surface. One such system uses chopped glass as the binder for 8 to 10 gallons per square foot of emulsified asphalt. Because of the great quantity of water used, this system is utilized in the southwest and on the west coast where there is little danger of freeze-thaw damage. After application, these roofs are normally coated with reflective paint.

Modified bituminous system–Since asphalt and coal tar pitch liquify at elevated temperatures and become brittle at low temperatures, some roofing suppliers blend macromolecules to modify the bituminous material. In most American systems,

this modified material is applied to polyethylene reinforcing sheets. One system is a heavy plastic core with bitumen on either side, a thin polyethylene film on the bottom and a heavier polyethylene film on top. A European system uses a polyester mat as reinforcing rather than polyethylene. That system generally uses one ply of conventional roofing membrane followed by the modified mat. This can be applied with either hot asphalt or cold adhesive.

Polymeric membranes–A new group of single membrane, loose laid, one ply, non-built-up roofing has been developed. Plastic or rubber-like sheet material is seamed by heat, adhesive or solvent and loose laid, or occasionally partially attached. Factory control for specific thickness and chemical formulations result in a more uniform and less labor intensive roof. There are three classes of polymeric membranes.

Thermal plastic–Polyvinyl chloride (PVC) is strong, stable, has good resistance to creep and can be solvent, adhesive or heat welded. Beginning with vinyl coated flashing material, PVC sheets are welded to the flashing and to itself in seaming. It is loose laid over the roof and ballasted. (PVC needs to be protected against asphalt and coal tar pitch fumes.)

Elastomers consist of natural and synthetic rubber and rubber-like materials. In this group are ethylene polypropylene diene monomer (EPDM), butyl rubber which is loose laid membrane systems. Very large sheets of rubber up to 45 feet in width are laid out, lapped, lap areas cleaned with gasoline and bonded with neoprene adhesives. Uncurred gummed neoprene sheeting is used in flashing.

Semi-elastomers are in between the thermal plastics and the true elastomers. They are hypalon, chlorinated sulfonated polyethylene and neoprene.

All of these loose laid systems require a relative heavy ballasting system.

Spray-applied polyurethane foam (PUF)–PUF sprayed polyurethan foam is the lightest roofing system which can be applied. The total weight of 2" of 3 lbs/ft^3 density foam is less than ½ lb/ft^2, which makes it a very attractive way for re-roofing or adding insulation to a structure of limited loading capability. PUF is mixed on the job so the quality of the finished produce depends on the applicator. PUF is the mixing of two components in the mixing chamber of a foam spray gun and sprayed on the roof surface where it expands 20 to 30 times. The roof requires some annual maintenance and occasional re-coating but has a high insulative value.

Liquid applied roof coatings–These coatings require special preparation of the deck. They fall in basically two types.

Solvent borne–The base elastomer compounded with pigments and curatives is dispensed in a solvent such as xylol. Applied like paint the solvent diffuses, evaporates and vulcanizes the elastomere in place. Most popular in this system has two or 3 coats of neoprene followed by one or two coats of colored hypalon. Multiple coats are necessary to allow the solvent to properly evaporate.

Low weight molecular compounds–Polysulfides and urethane elastomers do not require solvent evaporation and can be put on in one or two thick coats. Both of these coatings are very thin, show any variations in roof deck and may result in color variations. Roof granules may be sprayed into the final coating.

Protected roof membranes–Thermal insulation is installed on top of a water proof membrane resulting in greatly reduced thermal changes and physical hazards for the membrane. Closed cell extruded polystyrene such as styrofoam has been found to be the most satisfactory insulation for this type of roof. Due to the extreme lightness of styrofoam, at least 10 pounds of ballast must be added for each square foot to keep the insulation from floating or blowing away. Either a hot built up roof or a polymeric single ply membrane may be used.

Any time a new roof is applied over an existing roof and new insulation is added, a structural engineer should be retained to determine how much additional load the roof structure can handle.

Outside Contracted Roofing Work

As presented by:
John Schwenger
Executive Director of Facilities (Retired)
Aurora Public Schools
108 S. Peoria Street
Aurora, CO 80010
Phone: 303/333-3059

If you have problems with roofing, you are not alone. Most school districts have an abundance of low pitched roofs that are difficult to control. The market offers many varieties including fiber glasses, standard felts, plastics and rubbers.

There is one outstanding application for new roofs, but more appropriate for reroofing conditions. Essentially it consists of a spray application of mastic, into which 3-plies of roofing are embedded. Over this is applied more mastic, into which the final surfacing of granules are embedded. This system offers these features:

1) Original gravel on old roof is removed, therefore, making a lighter load.
2) Old roof remains, eliminating a costly tearoff.
3) With modern application techniques, the roofing can be applied in a shorter time.
4) Applied cold with spray equipment, no heating or handling of hot material required.
5) It must be pointed out, so that if additional insulation is to be added top of the old roof, and previous to the installation of the new material, the insulation must be hot mopped to the old deck, thus not eliminating hot material completely.
6) Permits lighter substructure when used as new roofing than when using hot applied material requiring a gravel surface.
7) Excellent for maintenance crews to find slight leaking before such leaks develop into a major problem. No sand or other materials to remove before repairs are made.

8) Gobs of repair materials are not scattered around because someone thought the leak was here when it was there.
9) Less pollution when applying roofing materials and no complaints of odors.
10) Mineral granule surfacing gives the roof a high reflectivity characteristic.
11) Components are factory finished under rigid quality control and are unaltered during application at job site.

Upside-Down Roof Fights Foul Weather in Fond du Lac

As presented by:
Edmund A. Kwaterski, RSBA
Director of Business Services
Fond du Lac School District
72 So. Portland
Fond du Lac, WI 54935
Phone: 414/922-4210

The Fond du Lac School District asked the question, "Should the schools' existing roofs continue to be patched – adding to the already high maintenance costs – or would it be a cost-effective investment to have new roofs installed?" The latter choice has proven to be the best answer.

Since 1973 all roofs on new buildings and all replacement roofing has been IRMA (Insulated Roof Membrane Assembly) by Dow Chemical Company. Not one single leak in seven years has resulted even though we are in an area where roofs are subjected to great "thermal shock."

What is thermal shock? Thermal shock is the term applied to the effect upon the roof's waterproofing membrane from its constant expansion and contraction caused by temperature extremes and rapid temperature changes.

What is IRMA? IRMA stands for Insulated Roof Membrane Assembly, a patented roofing system that uses conventional materials in a different, better way to substantially reduce roof failure.

How does it work? The roof membrane is laid directly on the roof deck, covered with STYROFOAM RM® board insulation and finished with loose laid 3/4" diameter stone.

Why insulation on top of the roof membrane? Because, the roof membrane – the most important and vulnerable part of the roof – is not subjected to the ultraviolet degradation, thermal cycling, exposure and roof traffic that causes alligatoring, splitting, ridging and all the rest of it.

Maintenance of roofs has been an occasional raking of stones. To date, we have had absolutely no problems with any of our roofs. A dry roof with dry insulation saves energy, labor and budget money.

Section 3

Lighting, Asbestos Control, Turf Areas and Negotiations

Wind Generation for Exterior Lighting

As presented by:
Jerald J. Till, RSBA
Executive Director of Business
Alief Independent School District
P. O. Box 68
Alief, TX 77080
Phone: 713/498-8110

Is my district suitable for a "wind machine?" With the energy crisis looming larger every day and district utility costs rising rapidly each budget year, perhaps it's time to look at wind power. This pollution-free, energy-free source may be right for you. While still in its infancy as an alternate energy source, the wind can be used in selected areas.

Two basic questions must be addressed:

1) Do you have enough wind?
2) What is your current KWH cost?

Additional Considerations

Site Selection:

- Every location has peculiar wind characteristics.
- Building size and arrangement.
- Obstructions affect wind flow several hundred yards behind site and up to 100 yards in front.

The Tower:

- Balance and stability are critical
- Minimum of 40 feet high: 3 times more wind power is generated at 30 30 feet than at 5 feet; 5.3 times more wind power is generated at 80 feet than at 5 feet.
- Designed to withstand maximum winds; guyed or free-standing.
- Well grounded.

The Windmill:

- Horizontal or vertical axis.

- Number and size of the blades. The average wind speed and the size of the blades are critical factors. The amount of energy nearly doubles with every 3 mph increase in wind speed.

The Generator System – The generator system converts the energy (mechanical) of the spinning shaft into electrical energy.

- Automatic disconnect.
- Rated capacity. Generators cannot produce more electricity than their rated capacity no matter how strong the wind.
- Self-starting.
- High voltage output.
- Will electricity generated be used directly, stored, sold back to a utility company, or be a combination?
- DC electricity is converted (if desired) to AC by a synchronous inverter.

What, where and how much to light:

- Probably a 2KV to 10KV system.
- Storage batteries.
- Outside night lighting (security/parking) and inside emergency lighting
- Any non-critical area, or conversely, an essential area when normal service would be disrupted.

Cost

Security Lighting Proposal

As presented by:

James Migliorino
Director of Maintenance & Operations
Glendale Elementary School District #40
5734 W. Glendale Avenue
Glendale, AZ 85301
Phone: 602/995-6749

I would like to recommend that we consider the purchase of high pressure sodium lighting for the exterior of our buildings.

Rational for this proposal:

1) We would reduce our energy consumption for exterior lighting.
2) Our lighting levels would be increased.
3) We will be providing added security: areas not previously lit would be affected; hopefully this will reduce vandalism.
4) Lower maintenance costs would result. Bulbs last an average of 10 years.
5) Light bulbs that burn continuously on a 24-hour basis would be eliminated. All new lights would be equipped with photo-cells.
6) Standardization will lead to reduced costs through purchasing, warehousing and inventory.

Projected Savings and Pay-Back Periods

Present System	Proposed System
250 —Par 38 (150 watt floods) = 37,500 watt/hr. of operation	140 HPS (150 watt) = 21,000 watt/hr. of operation
300 —100 Watt incandescent = 30,000 watts/hr. of operation	60 HPS (150 watts) 9,000 watts/hr. of operation
Total Watts per hr. 67,500 x 18 hr. = 1,215,000 watts/day x 365 days = 443,475,000 W or 443,475 KW/yr.	Total Watts per hr. 30,000 x 10 hrs. = 300,000 watts/day x 365 = 109,500,000 watts or 109,500 KW/yr.
443,475 KW x 0.58 (electric rate) = 25,721.55 cost per year	109,500 KW x 0.58 (Electric rate) = 6,351.00 cost per year
Estimated Savings = $19,370.55	

Cost of Program

200 HPS lights with photo cells @ $130.00 each
Total $26,000.00

Miscellaneous Costs

- Installation to be done by our electricians
  1½ hours allotted to each
  Estimated labor — 300 hours x $7.70/hr. = $2,310.00
- Approximately 60 fixtures would need special brackets made @ approximately $30.00
  Total — $1,800.00
- 60 fixtures need minor additional wiring @ 30 each —
  Total — $1,800.00

Total Estimated Cost

*Lights	—	$26,000.00
Labor	—	$ 2,310.00
Brackets	—	$ 1,800.00
Wiring	—	$ 1,800.00
Total	—	$31,910.00

Example of Estimated Savings

	One Year	Ten Years
1. Electrical energy	$19,370.55	$193,705.50
2. Light Bulbs		
100 watt-1,200 @ .17 ea.	204.00	2,040.00
150 watt floods-552 @ $1.48 ea.	816.96	8,169.60
	20,391.51 Total	203,915.10 Total

These costs indicate that the District can re-coup its investment in slightly over a one-and-a-half years figuring only electrical costs. It must be remembered there are other substantial savings such as maintenance of bulbs, inventory, warehousing, purchasing and vandalism.

The EPA's School Asbestos Control Program

As presented by:
H.M. Topel
Asbestos Technical Field Advisor
United States Environmental
Protection Agency – Region VI
1201 Elm Street
Dallas, TX 75270
Phone: 214/767-2734

The presence of friable (material which crumbles or can be reduced to powder in the hand) asbestos material in a school building can present a health hazard to both children and employees (teachers, custodians and others). In response to this concern, both the Environmental Protection Agency (EPA) and the Department of Education have worked together to establish a program to identify and correct asbestos related problems. Both agencies published proposed regulations (September 1980) which address this problem.

EPA's Program

The EPA Regulation requires:

1) Local Education Agencies must survey all of their buildings for friable asbestos materials.
2) All friable material must be sampled and analyzed to determine what percentage of asbestos it contains. (Three samples of each type of friable materials.)
3) A notice of the results of the inspection and any analysis must be posted in each building.
4) The PTA must be notified of the results of the inspection.
5) The schools must keep records on when the surveys were conducted and by whom, the location of all friable material, the analysis results including information on the location where each sample was taken and a copy of the notice and instructions to employees working around asbestos containing materials.

Technical assistance in conducting the surveys, conducting an exposure assessment on the condition of asbestos in a building or techniques for corrective action can be obtained from any of the 10 EPA Regional Offices. Copies of all documents can also be obtained from one of these offices or EPA's Industry Assistance Office (1-800-424-9065).

The Education Regulation will require that each local education agency report to the State Education Department on actions taken under this program. The States will then report to the Education Department. Under this regulation funds will be available in the form of a 50:50 grant for the survey program and a 50:50 loan for corrective actions to schools in any State which has filed an acceptable State Program Plan. The Education Department will review all funding requests and prioritize them; however, Congress has not appropriated any funds.

An Outline for Dealing with Asbestos Problems

As presented by:

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Agencies having publications relating to the subject are: Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), Department of Health and Welfare (DHW), Consumer Product Safety Commission (CDSC), Center for Design Technology (CDT), National Bureau of Standards (NBS), research department of professional organizations such as ASBO and local libraries.

I. Become and stay knowledgeable about pros and cons of potential asbestos hazards.

II. Alert to potential hazards of asbestos:
- A. Teachers
- B. Parents
- C. News media
- D. Students
- E. Staff

III. Investigate and identify by local staff trained in the problem.

For verification send samples for testing to qualified, approved testing firms (EPA approved list).

IV. Keep public informed through:
- A. Parent and student groups
- B. Staff meetings
- C. News media

V. If problem exists:
- A. Remain calm. Keep public emotions down if at all possible. *Do not panic.*
- B. Enlist aid of media.
- C. Determine extent of problem and course of action to eliminate it.
  1. Enclose. (Isolate by mechanical means – suspended ceilings, gypsum board, etc., @ $1.75 per sq. ft. estimated cost.)
  2. Encapsulate. (Isolate by chemical means – paint, lacquer, etc., @ $.90 per sq. ft. estimated cost, assuming an acrylic glaze coating or similar sealer.)

3. Remove. (Estimated cost @ $3.00 per sq. ft.)
4. Do nothing.

D. Seek funding:
   1. Local
   2. State
   3. Federal

E. Seek guidance from Department of Education (DOE), EPA, OSHA, NBS and other research organizations.

F. Talk with qualified firms that have dealt with asbestos removal and replacement successfully. A list of contractors who have been successful can be obtained from most state departments of education and your local EPA office.

G. Write specifications and guidelines from information gathered from architects, contractors, EPA, State Department of Education, etc.

H. Set priorities as to where and when course of action will be implemented.

I. When funds are available, advertise for correction of problem.

J. Continue to probe for existing asbestos in buildings and building materials that subject occupants to exposure to friable asbestos.

To Sod or to Seed, That is the Question

As presented by:
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Seeding Versus Sodding: With the increasing costs of labor and materials to transform undeveloped site areas into grassed play areas and the decreasing availability of funds, it has been necessary to reconsider the practice of sodding areas and look for cheaper alternatives.

For a given sum of dollars, twice the amount of grass area can be sprinkled and seeded versus sprinkled and sodded. The steps that one school district has used to provide a "quick" low cost and labor saving turf area is as follows:

1) Install an automatic sprinkler system for labor saving payback. (Make sure all sprinkler heads are installed a minimum of 12 inches below grade.)
2) Kill the existing weeds or low maintenance clump grass with "Roundup" or a comparable systemic weed-kill.
3) Mark all sprinkler heads and valve boxes with flags or lath.
4) Rototill or plow to a minimum depth of four inches. Ideal of six inches. Rototill various directions to break up the soil.

5) Use a land leveler to provide a smooth seed bed. To settle loose soil, soak the area and re-level when dry.
6) Fertilize soil with a balanced fertilizer.
7) Apply seed with a seed drill. (80 to 90 pounds per acre).
8) For a seed mixture that will germinate within five to seven days, showing green within 10 days and provide a sufficient play area in two months, the following mixture of seed worked very well:
   - Parade Kentucky Bluegrass – 29.40 Percent
   - Rugby Kentucky Bluegrass – 23.77 Percent
   - Aquila Kentucky Bluegrass – 19.60 Percent
   - Glade Kentucky Bluegrass – 5.33 Percent
   - *Perennial Ryegrass* – 19.20 Percent
9) Water sufficiently to keep ground wet at all times.
10) Fertilize after approximately four weeks of growing time.
11) Two months after seeding, the rye grass will be well established and should be capable of supporting general use.

Negotiations—A Point of View

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Experience has shown us that most public school systems enter into formal negotiations with employees, especially classified employees, very reluctantly. This reluctance to become involved in the process has two ramifications:

- It immediately fosters an adversary attitude between employer and employee.
- It sends the management team to the table with a negative sense of direction. It hampers true bargaining. Most agreements resulting from this type of forum are unsatisfactory to the management personnel who worked most closely with unit members and unions.

It is the intent of this presentation to suggest a more moderate and positive approach by management including the local Board of Education. Very important ground work must be done within the managerial ranks prior to the formalization

of any employer/employee work agreement. It would appear essential that at least the following be accomplished:

- The local Board should be encouraged to adopt and codify an all inclusive set of policies covering classified employees. Mere practice and consideration are insufficient.
- All jobs should have appropriate job descriptions in writing.
- Individuals should be identified as an employees relations team to expedite the above things and select a managerial bargaining team.
- The Board must be kept abreast of this preliminary work in order that it can formulate workable parameters for their management negotiators.

Items stressed in the presentation will pertain to table techniques, personalities of team members, bargaining postures and agreement language. In addition, mention will be made of the responsibilities of the first line supervisors and how they must conduct themselves in living with a master agreement. Hiring procedures, as well as comprehensive training courses take on a new importance under an agreement, as do evaluation procedures and the disposition of grievances. Supervisory personnel need to be given necessary expertise in disciplinary and discharge procedures to insure due process for the affected employee.

Finally, attention will be given to the importance of good positive relationships between management and the exclusive representative organization during the duration of the agreement.

About ASBO and Its Purpose

THE Association of School Business Officials of the United States and Canada, an international professional educational management-oriented organization, is the oldest and largest association in North America devoted exclusively to the improvement and advancement of school business management, public and private.

Founded in 1910 through the auspices of the U.S. Office of Education, ASBO is dedicated to researching, analyzing and publicizing improved methods of school business management in 23 specialties. ASBO's membership of about 5,500 active members is from all 50 states, 10 provinces of Canada and overseas.

An integral part of ASBO is its "Research Corporation," a publishing/research subsidiary devoted to advancing educational management at all levels by conducting and promoting significant research programs in all facets of school business management. Twenty-three research committees, staffed with several hundred "expert" generalists and specialists continually confront the biggest issues facing educators.

Statement of Purpose

The Association of School Business Officials of the United States and Canada is a nonprofit, educational organization dedicated to researching, determining and publicizing better methods of school business administration.

ASBO has as its concern the improvement of efficiency in school business management.

In today's highly competitive world, the demands made on the school business official's time and skill are increasing. At a time when school business operations have reached an unparalleled degree of complexity and the maintenance of efficiency and service has become a major problem, school business officials are being asked to perform their jobs with even greater precision and effectiveness.

In this environment, the Association of School Business Officials has an obligation to aid the modern school business official in the performance of his duties and responsibilities. ASBO does this by bringing to the attention of its members new and accurate management methods, tools, techniques and procedures that will enable them to better perform their management functions of planning, organizing, coordinating, controlling, evaluating, improving — AND the wise expenditure of the taxpayer's money with which they have been entrusted.

This is accomplished through the ASBO educational program of workshops, conferences, discussion groups, annual meetings and a far reaching publications program. It also includes the encouragement of courses and programs in the field by recognized and accredited colleges and universities, the sponsoring of research projects and the encouragement of other research projects in the field.

ASBO's monthly journal, SCHOOL BUSINESS AFFAIRS and its ASBO ACCENTS newsletter are publications representative of the ASBO educational program — "of school business management, by school business officials, for the improvement of school business administration."